



PATENT APPLICATION  
Docket No: 14321.67

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of )

Nobuhiro Nunoya et al. )

Serial No.: 10/527,355 ) Art Unit

) 2811

Filed: March 7, 2005 )

)

Confirmation No.: 4938 )

)

For: OPTICAL SEMICONDUCTOR DEVICE AND OPTICAL )  
SEMICONDUCTOR INTEGRATED CIRCUIT )

CERTIFICATE OF DEPOSIT UNDER 37 C.F.R. § 1.8

I hereby certify that the following documents are being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to: Commissioner for Patents, PO Box 1450, Alexandria, Virginia 22313-1450, on the 2<sup>nd</sup> day of May 2006.

- Transmittal for Second Supplemental Information Disclosure Statement (3 pages)
- Second Supplemental Information Disclosure Statement (3 pages)
- Form PTO-1449 listing 5 references (2 pages)
- A copy of 2 Non-US references listed on the Form PTO-1449
- A copy of Supplemental Partial European Search Report for No. EP 04724370.4
- Postcard

Respectfully submitted,

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Nobuhiro Nunoya et al. )

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For: OPTICAL SEMICONDUCTOR DEVICE AND )  
OPTICAL SEMICONDUCTOR INTEGRATED )  
CIRCUIT )

## TRANSMITTAL FOR SECOND SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Transmitted herewith for filing and pursuant to 37 C.F.R. § 1.97 is a Second Supplemental Information Disclosure Statement, which includes the following statements, if any, required variously by 37 C.F.R. § 1.98:

- Statement of relevance of selected cited references not in the English language which are not translated.
- Statement that selected cited references are substantially cumulative of an enclosed or previously submitted reference.
- Statement that selected cited references were previously cited by or submitted to the United States Patent and Trademark Office in a prior application which is relied upon for an earlier filing date under 35 U.S.C. § 120.

A. Additional Materials Required Due to Content of Information Disclosure Statement

Transmitted are the following documents in addition to the Information Disclosure Statement as required variously under 37 C.F.R. § 1.98:

- Form PTO-1449 listing 5 references submitted for consideration.
- A copy of 2 Non-US references listed on the Form PTO-1449.
- English translations of three (3) of the references listed on the Form PTO-1449 which are not in the English language.
- Copies of the following documents from the prosecution of a previous, related application:
  - Form PTO-1449 AND INFORMATION DISCLOSURE STATEMENT; and
  - Form PTO-892

B. Additional Materials Required Due to Timing of Filing of Information Disclosure Statement

The transmitted Supplemental Information Disclosure Statement is being filed within one (1) of the following four (4) time periods:

- I.  Prior to the later of either three (3) months following the filing date or the mailing of a first Office Action. Accordingly, no materials other than those listed above are enclosed.
- II.  Following the latter of either three (3) months following the filing date or the mailing of a first Office Action, but before the mailing of a final Office Action or a Notice of Allowance. Accordingly, to secure consideration thereof, one (1) of the following is also enclosed:
  - Promptness Certification; or
  - Check No. \_\_\_\_\_ in the amount of \_\_\_\_ constituting the submission fee set forth in 37 C.F.R. § 1.17(p).
- III.  After the mailing of a Notice of Allowance, but before payment of the Issue Fee. Accordingly, in order to secure consideration thereof, each of the following are also enclosed:
  - Promptness Certificate;
  - Petition for Consideration; and

- Check No. in the amount of \_\_\_\_ constituting the petition fee set forth in 37 C.F.R. § 1.17(i)(1).
- IV. — After payment of the Issue Fee. Accordingly, in order to secure consideration thereof, each of the following are also enclosed:
- Petition to Withdraw from Issue; and
- Check No. \_\_\_\_ in the amount of \_\_\_\_ constituting the petition fee set forth in 37 C.F.R. § 1.17(i)(1).

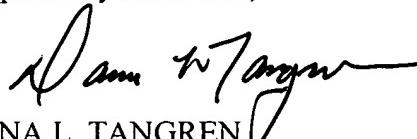
C. Fees

The Commissioner is hereby authorized to charge payment of or any deficiency in the following fees associated with this communication, or to credit any overpayment thereof, to Deposit Account No. 23-3178. A duplicate copy of this letter is enclosed.

- Any fee required in relation to filing of this letter or any documents transmitted therewith.
- The submission fee set forth in 37 C.F.R. § 1.17(p) in the event that 37 C.F.R. § 1.97(c) applies and the Examiner is not satisfied that any Promptness Certificate submitted meets the requirements of 37 C.F.R. § 1.97(e).
- The submission fee set forth in 37 C.F.R. § 1.17(p).
- The petition fee set forth in 37 C.F.R. § 1.17(i)(1).

Dated this 2<sup>nd</sup> day of May 2006.

Respectfully submitted,

  
DANA L. TANGREN  
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Registration No. 37,246  
Customer No. 022913  
Telephone No. 801.533.9800



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Serial No.:         10/527,355                      ) Art Unit  
                        ) 2811  
Filed:              March 7, 2005                      )  
                        )  
Confirmation No.:  4938                              )  
                        )  
For:                 OPTICAL SEMICONDUCTOR DEVICE AND )  
                       OPTICAL SEMICONDUCTOR INTEGRATED CIRCUIT )

SECOND SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT  
UNDER 37 C.F.R. § 1.97

Commissioner for Patents  
PO Box 1450  
Alexandria, Virginia 22313-1450

Sir:

Please find, pursuant to 37 C.F.R. § 1.98(a)(1), the enclosed Form PTO-1449 which contains a list of all patents, publications, or other items that have come to the attention of one or more of the individuals designated in 37 C.F.R. § 1.56(c). While no representation is made that these references may be "prior art" within the meaning of that term under 35 U.S.C. §§ 102 or 103, the enclosed listed references are disclosed so as to fully comply with the duty of disclosure set forth in 37 C.F.R. § 1.56.

Moreover, while no representation is made that a specific search of office files or patent office records has been conducted or that no better art exists, the undersigned attorney of record believes that the enclosed art is the closest to the claimed invention (taken in its entirety) of which the undersigned is presently aware, and no art which is closer to the claimed invention (taken in its entirety) has been knowingly withheld.

In accordance with 37 C.F.R. §§ 1.97 and 1.98, a copy of each of the listed references or relevant portion thereof that is not a US patent document is also enclosed.

Statement of Relevance of References Listed  
Unaccompanied by English Translation  
Under 37 CFR § 1.98(a)(3)

In accordance with 37 CFR § 1.98(a)(3), the following concise explanation of the relevance of each listed reference that is not in the English language and unaccompanied by a translation into English is provided.

Japanese Application No. JP 55123188: PURPOSE: To make it unnecessary to use a special container that maintains the temperature constant by reducing the temperature dependence of the Bragg condition, by using, as a material for a waveguide path layer constituting a spectral Bragg reflection mirror, a substance having different signs for refraction coefficient and temperature variation. CONSTITUTION: On an n-type GaAs substrate 16 are laminated and grown in succession an n-type GaAs layer 15, a p-type GaAs layer 14 which becomes a light waveguide layer, a p-type Ga<sub>0.7</sub>Al<sub>0.3</sub>As layer 13 and a p-type GaAs layer 12. Next, by vacuum evaporation, n side electrode 1 is fitted on the layer 12, and n side electrode 5 is fitted on the back side of the substrate 16. By operating photolithography and chemical etching, only the region II, which becomes a spectral Bragg reflection mirror, is retained and the rest are removed up to the surface of the layer 14. Subsequently, the exposed surface of the layer 14 is coated with a photoresist film, and by the two light flux interference method using an ultraviolet laser, interference stripes are formed on the surface of the photoresist film. By operating chemical etching, these interference stripes are transferred to the surface of layer 14. Next, silicate glass 18 containing TiO<sub>2</sub> is evaporated on the resultant indented surface.

Japanese Application No. JP 2000223784: PROBLEM TO BE SOLVED: To reduce the wavelength variation of a semiconductor laser against the temperature variation by setting the absolute value of the temperature coefficient of the refractive index of a semiconductor layer to a specified value or less to an oscillable wavelength. SOLUTION: The layer arrangement comprises a substrate 41 (InNP), an optical guide layer 24 (InGaAsNP of 1.3 μm), an active layer 23 (nGaAsNP of 1.55 μm), and optical guide layer 22 (InGaAsNP of 1.3 μm) and a clad layer 21 (InNP). A forward bias voltage is applied between an anode 11 and a cathode 12 to flow a current over the threshold in a semiconductor laser, thereby starting oscillating. When the material or the compsn. of a semiconductor layer is changed to provide a temperature coefficient of 10-5K-1 of the refractive index, the wavelength changes about 8 deg. in the same temperature range and such a wavelength stability as on this order is enough to form an optical integrated circuit of a semiconductor laser. Thus, a semiconductor laser with a little or no variation of the oscillation wavelength can be realized.

Non-Prior Art References

Enclosed for the Examiner's consideration is a copy of Supplemental Partial European Search Report dated March 22, 2006 for European Application No. 04724370.4 which relates to the same invention as the present application.

May 2, 2006  
Page 3

Dated this 2<sup>nd</sup> day of May 2006.

Respectfully submitted,

  
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Applicant: Nobuhiro Nunoya et al.

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Att'y Docket No.: 14321.67

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Art Unit: 2811

For: OPTICAL SEMICONDUCTOR DEVICE AND OPTICAL SEMICONDUCTOR  
INTEGRATED CIRCUIT

SECOND SUPPLEMENTAL INFORMATION DISCLOSURE  
CITATIONS MADE BY APPLICANT

U.S. Patent Documents

Examiner <u>Initial*</u>	Document <u>Number</u>	Issue <u>Date</u>	Name
____ 1	5,022,042	06/04/1991	Bradley
____ 2	5,157,468	10/20/1992	Matsumoto
____ 3	6,501,776 B1	12/31/2002	Numai

Foreign Patent Documents

Examiner <u>Initial*</u>	Document <u>Number</u>	Publication <u>Date</u>	Country or <u>Patent Office</u>	<u>Translation</u>
____ 4	55-123188	09/22/1980	Japan	No
____ 5	2000-223784	08/11/2000	Japan	No

Other Documents  
(including author, title, pertinent pages, etc.)

Examiner  
Initial\*

Date Considered:

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant: Nobuhiro Nunoya et al.

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For: OPTICAL SEMICONDUCTOR DEVICE AND OPTICAL SEMICONDUCTOR  
INTEGRATED CIRCUIT**References Cited by Applicants**

While the filing of Information Disclosure Statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 C.F.R. §§ 1.97 and 1.98. To be considered a proper Information Disclosure Statement, Form PTO-1449 shall be accompanied by a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), an explanation of relevance of each reference not in the English language, and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all citations submitted in conformance with 37 C.F.R. § 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the spaces provided on this form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the Examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines AND has not been considered. A copy of the submitted form, as reviewed by the Examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

Each citation initialed by the Examiner will be printed on the issued patent in the same manner as references cited by the Examiner on Form PTO-892.

The reference designations "A1," "A2," etc. (referring to Applicant's reference 1, Applicant's reference 2, etc.) will be used by the Examiner in the same manner as Examiner's reference designations "A," "B," "C," etc. on Office Action Form PTO-1142.

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Examiner:

Date Considered:

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.